

## ABSTRACT

The present invention finds the acoustic impedance of the drilling fluid using reflections from a precise metal disk, and therefrom the density of the drilling fluid. Because the reverberation characteristics of an acoustic wave depend in part on the acoustic wave shape, the first reflection from the metal disk may be used to calibrate the measurement. A method for determining a borehole fluid property is disclosed that includes (i) generating an acoustic signal within a borehole fluid, (ii) receiving reflections of the acoustic signal from the fluid, and (iii) analyzing a reverberation portion of the acoustic signal to determine the property. The analyzing of the reverberation portion may include obtaining a theoretical reverberation signal and relating the measured reverberation signal with the theoretical reverberation signal to determine the borehole fluid property.